ABSTRACT

A method for determining the viral load from a patient is disclosed that utilizes a microarray output pattern generated from a biological sample taken from a patient. A related technique is described for tracking viral load levels by analyzing dot spectrograms representative of quantized hybridization activity in biological samples, such as DNA, RNA, or other protein biomolecular array samples, taken at different times from a single source. This technique enables disease progression analysis based on surrogate markers such as viral load. In accordance with the technique, a viral diffusion curve associated with a therapy of interest is generated and each dot spectrogram is then mapped to a viral diffusion curve using fractal filtering. Next, degree of convergence towards the peak of VDC, between the sample points on a filtered viral diffusion curve is determined. The technique allows for point-of-care viral load detection biosensors to accurately and reliably predict the likelihood of disease progression.